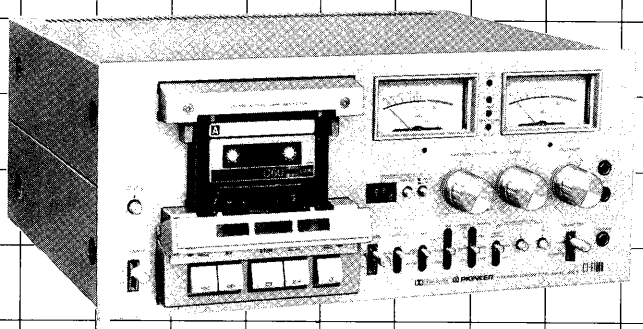
3-HEAD
CASSETTE TAPE DECK

CT-F1000

D
D/G
HG

OPERATING INSTRUCTIONS



CT-F1000 are designed to operate 220V or 240V (HG model) main and 120V, 220V or 240V (D, D/G model) main. Before turning on the power, please confirm the line voltage setting indicated on the rear of your unit corresponds to the supply voltage in your area; if not, change the setting as described in Line Voltage and Rear Panels on page 20.

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FEATURES

Closed-loop Dual Capstan Transport for Maximum Tape Run Stability

The CT-F1000 adopts a closed-loop dual capstan transport which ensures that the tape runs between the left and right capstans at a uniform tension and which provides an extremely stable head contact. This transport also reduces dropouts and level fluctuations to the minimum, and also suppresses external vibrations transmitted from the reel base, tape guide and other parts to the tape. These advantages mean that cross modulation distortion is reduced. Furthermore, the FG (frequency generator) type of DC servomotor which keeps the speed at an extremely accurate level and is unaffected by the ambient temperature and voltage fluctuations, the ultra-precision finished capstans and the flywheel with its excellent dynamic balance all make for a superior wow and flutter and yield both recordings and reproductions which are faithful in every way to the original sound.

Yet another sound feature is the compact mechanical governor motor for the fast forward and rewind operations. It displays an admirably good rotation torque for surefire fast forward and rewind.

Three-head System with R & P Combination Head

The CT-F1000 incorporates a combination head which contains the recording and playback heads with their excellent phase characteristics, frequency response, signal-to-noise ratio and other specifications in a single case. The uni-crystal ferrite material with its superb frequency response and resistance to wear allows a stable head contact and it is not susceptible to dust adhesion. This means that the sound quality is upgraded, and that the recordings and reproductions feature a surprisingly high signal-to-noise ratio. The combination head is a 3-head system so that there is very little space between the recording and playback heads. That's not the only advantage: if the playback head is actuated during recording, you can monitor the quality of the recording almost in real time.

Built-in Dolby System with Dolby Calibration Circuit

The adoption of a Dolby system in the CT-F1000 reduces annoying tape hiss during playback without impairing the quality of the program source sound (an improvement at the high-end frequency range of about 10dB). This results in an expanded dynamic range and recordings and reproductions with an improved signal-to-noise ratio. The built-in Dolby calibration circuit allows the Dolby level to be compensated in accordance with the specifications of the tape you are using on the CT-F1000, and provides an efficient Dolby effect for every kind of tape.

Chrome Tape Automatic Selector Mechanism, Bias and Equalizer Selector Switches

The CT-F1000 is equipped with independent bias and equalizer switches so that not only chrome tapes but also low-noise tapes, ferrichrome tapes and standard tapes can give full rein to their characteristics. For chrome tapes, the built-in chrome tape selector mechanism detects the special detection holes and automatically selects the chrome position. These switches feature electronic selector circuits which employ semiconductors and so they are very reliable and do not generate noise during selection.

IC-oriented Amplifier Section for High Reliability

The CT-F1000 incorporates the microphone amplifier, flat amplifier, recording amplifier and headphone amplifier circuits all on integrated circuits (ICs). Sophisticated IC technology is the key to ultra-low distortion. In particular, the recording amplifier and the microphone amplifier yield a dynamic range with plenty to spare and also a superior signal-to-noise ratio and so the recordings are always high-quality and faithful to the original sound.

Accessory Mechanism

Pitch control knob: This knob can be used to make the tape travel up to 6% faster or slower than the rated tape speed (4.8cm/s) during playback. This means that you can raise or lower the musical steps by as much as a semitone. You can therefore adjust the musical steps of the music which you are playing back with the musical steps of an instrument which you intend to play along with the pre-recorded music. This feature is particularly effective when you want to use a tape for accompaniment to songs.

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CT-F1000 APPLICATIONS

- The stereo and monophonic playback of commercially sold music tapes (pre-recorded).
- Recording from FM broadcasts and records. (LINE terminals and DIN connector).
- Live stereo and monaural recordings with microphones (MIC jacks).
- Mixing recording between microphones and broadcasts or records (MIC jacks and LINE terminals).
- Mixing recording between broadcasts and records of tapes (DIN connector and LINE terminals).
- Follow-on recording for convenient editing.
- Memory mechanism allows repeated automatic playback.
- Unattended recording and wake-up playback (with timer switch).

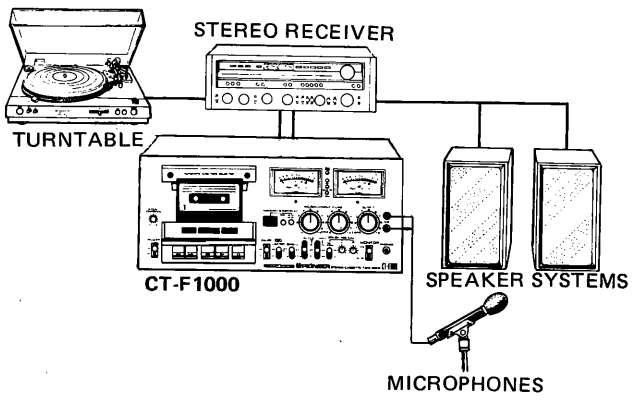


Fig. 1

KEEP THE HEAD SECTION CLEAN

The heads, capstan and pinch roller get dirty very easily since they come in contact with the tape. Always make sure that you keep the spots illustrated in Fig. 2 clean so that you get true hi-fi performance when you record and play back your tapes. For further details, refer to page 17 and the section on 'Maintenance.'

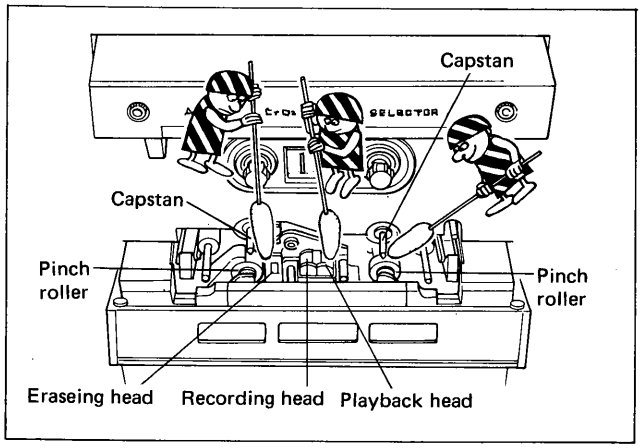


Fig. 2

INSTALLATION PRECAUTIONS

To ensure the best sound quality and trouble-free operation, avoid setting up the tape deck in any of the locations described below.

Location liable to downgrade performance and result in breakdowns	Resulting trouble
1. Locations exposed to direct sunlight, or near heaters or other heat sources.	1. External heat causes the performance of the circuit parts to deteriorate, and operation becomes unstable.
2. Locations with poor ventilation, or with high humidity or moisture contents, or dusty locations.	2. Cause of faulty contact in input/output terminals, and rust. High humidity and a high moisture content cause deterioration in insulation. There is also the danger of current leakage and heat generation in the circuit parts. Dust or grease in the rotating parts causes the parts to deteriorate.
3. Locations susceptible to vibration.	3. These locations affect the precision parts adversely.
4. Locations where there are thinners, benzine and other types of volatile liquids, insect sprays or any kind of inflammable objects at hand.	4. These help to corrode the front panel. In particular, the heads are precision-finished to micron dimensions. Chemicals may reduce their performance, so exercise all due care.

FRONT PANEL FACILITIES

POWER SWITCH

Power is supplied when this switch is set to ON, at which time the level meter lamps and the remaining tape display lamp go on.

PITCH CONTROL KNOB

You can use this to make the tape travel 6% faster or slower than the rated tape speed during playback. When this knob is set to the central position, the tape speed is a standard 4.75cm/s. Turn the knob to the left and the speed drops and the musical steps are lowered. Conversely, turn it to the right, and the speed rises and the musical steps are raised. The tape speed does not change while recording.

TAPE COUNTER

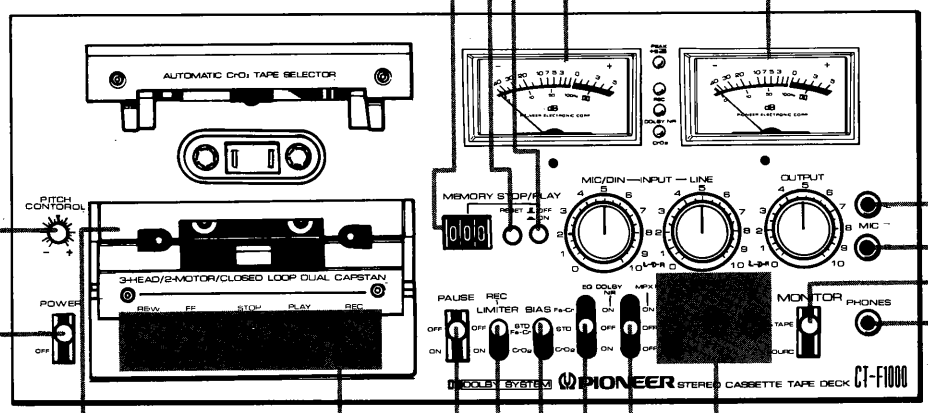
This indicates the tape running position.

COUNTER RESET BUTTON

Push this button to reset the tape counter to '000.

MEMORY SWITCH

When this switch is set to ON, the position at which the tape counter was set to '000' is memorized during recording or playback, and the memory play and memory stop functions can then be performed. For further details, refer to page 15 and to the section on the 'Memory Stop and Play Functions.'



DUST COVER

Use this cover when you are not using your tape deck and it will stop dust and dirt from entering the head section and rotating parts.

OPERATING LEVERS

REW ◀◀ (rewind): Press down to rewind tape. (Tape travels from right to left).

FF ▶▶ (fast forward): Press down for tape fast forward. (Tape travels from left to right).

STOP ■ : Press down to stop the tape. This action also releases the other operating levers.

PLAY ▶ : Press down to play back the tape. Press down together with the REC lever when recording. (Tape travels from left to right).

REC ● (record): Press down together with the PLAY lever when recording.

NOTE:
The operating levers will not be released if the power is turned off.

PAUSE SWITCH

The tape run is temporarily suspended if this switch is set to ON during recording or playback. When returned to OFF, however, the tape will start to run again. The PAUSE switch will not work if the tape deck is set to the REW or FF modes.

EQ SWITCH

This selects the recording equalization characteristics according to the type of tape used. Select the same position for playback as for recording according to the characteristics of the recording tape.

Fe-Cr: For ferri-chrome tapes.

STD: For standard and LH tapes.

CrO_2 : For chrome tapes.

NOTE:
There is no need to select the suitable position with a chrome tape provided with detection holes since the bias and equalization circuits are activated automatically.

BIAS SWITCH

This selects the recording bias current in accordance with the type of tape used for recording.

STD, Fe-Cr: For standard tapes, LH tapes and ferri-chrome tapes.

CrO_2 : For chrome tapes.

REC LIMITER SWITCH

Set this switch to ON and record when there are high variations in the recording level which exceed the reference level, or when it is difficult to control the recording level. For further details, refer to page 12 and the section on 'Limiter Recording.'

LEVEL METERS

These meters allow you to read out the levels during recording and playback. When the MONITOR switch is set to SOURCE, they indicate the input signal level, and when set to TAPE, they indicate the playback output level.

MIC JACKS

These are the input jacks for microphone recording. The left and right channels can be used independently. Only the microphones' input signals are recorded when the REC/PLAY connector (DIN standard) on the rear panel and the MIC jacks are connected at the same time. Use microphones with an impedance ranging from 250 ohms to 30 kilohms.

MONITOR SWITCH

You can listen to the recorded signals (playback sound) if you set this to TAPE. If you set it to SOURCE, you can listen to the signals just before they are recorded (recording input). While recording, alternately select both positions and monitor your recording. Set this switch to TAPE when playing back a tape.

PHONES JACK

This is the output jack for stereo headphones. Signals selected by the MONITOR switch are available here. Use the jack when you want to monitor your recording or listen to a performance directly from the CT-F1000. The output level is adjustable.

NOTE:
Please use low impedance-type headphones.
If you use high impedance-type headphones, you may not obtain sufficient volume.

DOLBY REC CAL SWITCH & CONTROLS

Use these to adjust the Dolby recording and playback levels in accordance with the type of tape you are using.

TEST 400Hz switch: When set to ON, signals are oscillated for adjusting the recording/playback level. This switch is usually set to OFF.

DOLBY REC CAL (L, R) controls: Use these controls to adjust the Dolby level. For further details, refer to page 12 and the section on 'Using the DOLBY REC CAL Switch & Controls.

DOLBY NR/MPX FIL SWITCH

Dolby system and multiplex filter.

Set this switch to DOLBY NR ON when recording with the Dolby system or when playing back a tape which has been recorded with the Dolby System.

Set this switch to the MPX FIL ON position when recording (Dolby) without the FM stereo broadcast pilot signal (19kHz).

ON/ON: When playback in Dolby or when recording an FM stereo broadcast in Dolby using an FM tuner with MPX pilot signal leakage.

OFF/OFF: When not recording or playback in Dolby.

ON/OFF: When playback in Dolby or when recording a program source in Dolby other than an FM stereo broadcast, or when using an FM tuner with no MPX pilot signal leakage.

CrO_2 INDICATOR

This indicates that a chrome tape is being used. It also goes on when a cassette has not been inserted into the tape deck. This does not indicate a failure.

DOLBY NR INDICATOR

This lights up when the DOLBY NR switch is set to ON.

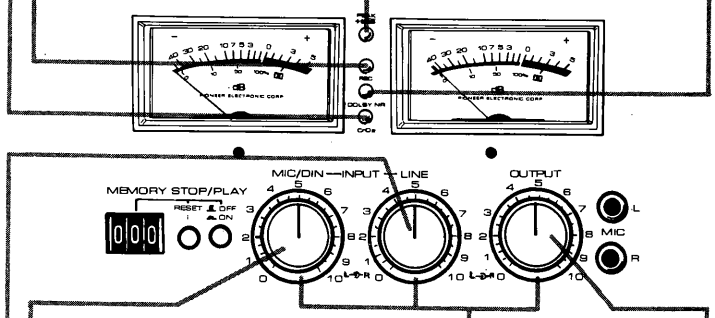
RECORDING INDICATOR (REC)

This red indicator lights up during recording.

NOTE:
Be sure to start recording only after you have checked that the recording indicator is on.

PEAK +5dB INDICATOR

This lights up when the recording level exceeds +5dB. When recording, adjust the level with the INPUT recording level (LINE, MIC/DIN) controls so that this lamp does not light up continuously.



MEMORY MARKER KNOB

You can use this knob to help you remember the level control settings.

OUTPUT LEVEL CONTROLS

Use these controls to adjust the output level when you are playing back a tape. The level increases as the controls are turned to the right. The outer control is for the right channel, and the inner control is for the left channel.

MIC/DIN RECORDING LEVEL CONTROLS

Use these controls to adjust the recording level when you are recording with a microphone (or microphones), or when you are using the rear panel REC/PLAY connector (DIN standard). Use the outer control for the right channel and the inner control for the left channel. Input signals from both the MIC jacks and REC/PLAY connector cannot be recorded simultaneously.

LINE RECORDING LEVEL CONTROLS

These adjust the recording input level from the LINE INPUT terminals on the rear panel. The level increases as the controls are turned to the right. The outer control is for the right channel and the inner control, for the left channel.

CONNECTIONS

Connect the CT-F1000's LINE terminals to the tape terminals on the receiver (or stereo amplifier) with the accessory cords. The top terminal is for the left channel and the bottom for the right channel.
If you do not connect properly, you will hear a monotonous single-pitched hum and this will impair your recording.

Connections for playback

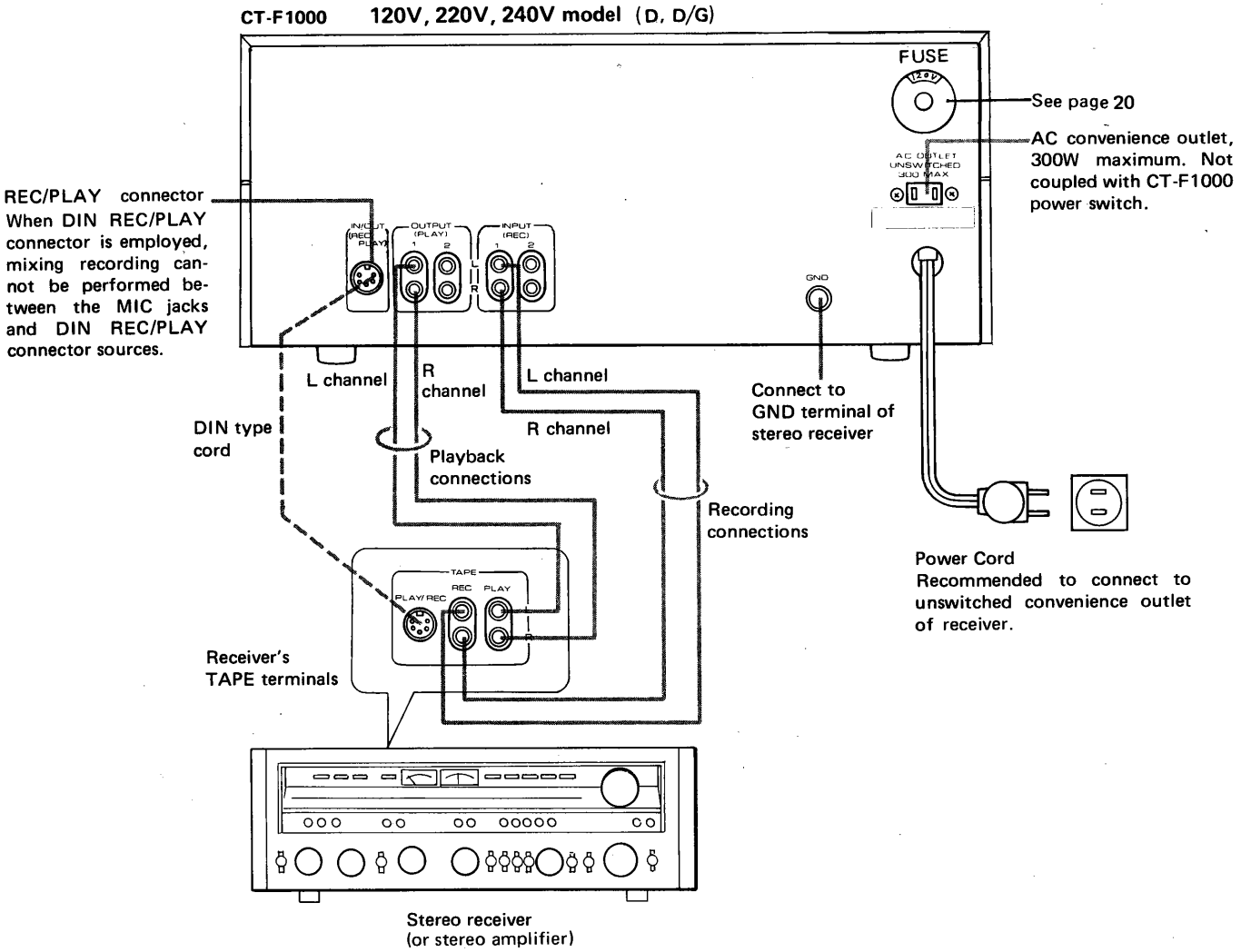
Connect the TAPE PLAY input terminals on the receiver to the CT-F1000's LINE OUTPUT terminals.

Connections for recording

Connect the receiver's TAPE REC output terminals to the CT-F1000's LINE INPUT terminals.

Using the REC/PLAY connectors

You can connect for playback and recording at the same time if you use recording/playback cords which are bought separately, as long as the receiver comes with DIN-standard recording/playback connectors. Use the MIC/DIN recording level controls to adjust the recording level. You will not be able to record the signals from the REC/PLAY connectors if you connect a microphone (or microphones) to the MIC jacks.



CASSETTE TAPES

Cassette tapes are manufactured according to international standards governing their construction, and they are generally classified according to their tape performance and recording time.

Performance classifications

Table 1

Standard type	Low-noise type	High-performance type
• Standard tape • Dynamic tape	• Low-noise tape • Low-noise, high-output tape	• Chrome tape • Ferri-chrome tape • Duad ferri-chrome tape

NOTE:
You can set the tape switches on the CT-F1000 to the suitable positions for all of these tapes. For further details, refer to page 11 and the section on 'Selecting the Bias and Equalizer Switches.'

Recording time classifications

Table 2

Cassette tape designation	Recording time (minutes)	
	One side	Both sides
C-30	15	30
C-46	23	46
C-60	30	60
C-90	45	90
C-120	60	120

The size of the cassette tapes is the same but their playing (and recording) times differ according to the tape thickness (length).
The C-60 and C-90 tapes are most commonly used. The C-120 tapes are not recommended because their mechanical and electrical specifications vary.

CHECK CASSETTE BEFORE USE

Slack or protruding tapes

If the tape protrudes from the cassette as shown in Fig. 3, or is slack the tape may run without passing through between the capstan and the pinch roller, and so may be damaged. Take up the slack by inserting a pencil through the reel hub and turning it as indicated in the figure.
Some tapes provide a tape stopper to prevent tape slack. Make sure that you remove the tape stopper before inserting the tape into the deck.

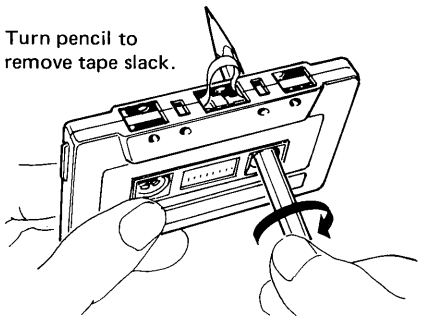


Fig. 3

Erasure prevention tabs

Cassette tapes are provided with erasure prevention tabs, as shown in Fig. 4, which act as a protection device to prevent the accidental erasure of a recording which you want to keep. If you remove the tabs, as shown in Fig. 4, with a screwdriver you will be able to prevent erasure if you accidentally set the CT-F1000 to the recording mode by depressing the REC lever.
To-re-record, cover the tab opening with a double layer adhesive tape (Fig. 5).

NOTE:
Cassette tapes are provided with two tabs (A or 1 and B or 2) and so you can protect the recordings on both sides.

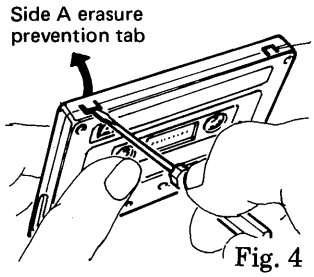


Fig. 4

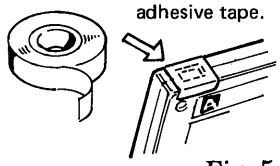


Fig. 5

CHECKPOINTS WHEN HANDLING CASSETTES

Check tape before recording

Before recording, first run the tape through fast forward and rewind. This is to prevent jamming or running irregularities from affecting the recording.

Allow for the leader tape

A leader tape is provided (it cannot be recorded) at the beginning of each cassette tape. Allow about 5 seconds for it to clear the heads before starting recording.

Always keep in the case

Avoid leaving cassette tapes uncovered. The cassette case protects the tape from dirt and dust and safeguards it against unwinding.

Do not use tape right after cleaning heads

Allow the heads to dry completely (2—3 minutes) after cleaning them with head cleaning fluid. Then insert the tape.

Tape storage

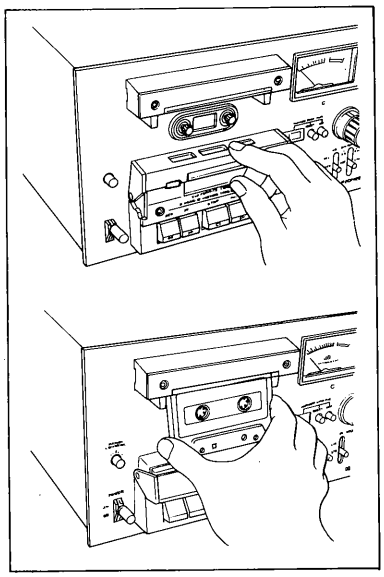
Always store your tapes in a location which is unaffected by dirt, dust, oil and magnetic fields.

Do not touch tapes

Do not allow your hands to come into direct contact with the tape surface, since this may cause drop-outs in the sound.

BASIC OPERATION

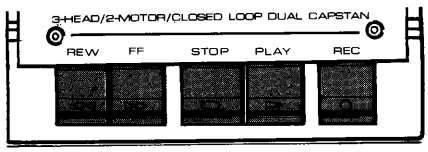
TAPE INSERTION



Place your forefinger on the edge of the dust cover and pull towards you.

Aligning the cassette tape with the guide, push upward and insert. When you want to remove the tape, pull it towards you.

TAPE RUN

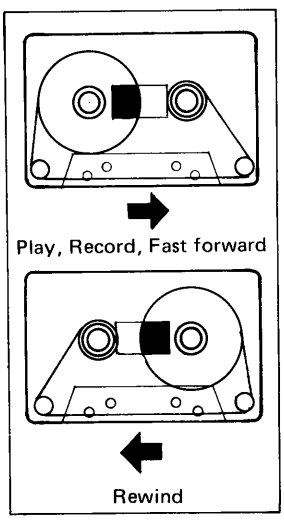


Play and record
1. Check that the tape is on the left reel.
2. The tape runs from left to right when the PLAY lever (and the REC lever if recording) is depressed.

Stop
Press the STOP lever to stop tape motion. This action also releases the other operating levers.

Fast forward
1. Check that the tape is on the left-hand reel.
2. The tape runs from left to right at a high speed when the FF lever is depressed.

Rewind
1. Check that the tape is on the right-hand reel.
2. The tape runs from right to left at a high speed when the REW lever is depressed.



NOTES:
- *Do not depress more than one lever at a time except when recording.*
- *You do not have to depress the STOP lever when selecting the next mode, since the levers feature a direct change mechanism.*

PAUSE SWITCH OPERATION

1. The tape motion can be stopped during recording or playback by setting the PAUSE switch to ON. The PLAY lever (and the REC lever if recording) are not released from their depressed positions.
2. If the PAUSE switch is returned to OFF, the tape will begin to run again.

Convenient applications

- When setting the recording level.
- When cutting out unnecessary sections of a program source which you are recording and then continuing your recording.
- When you want to stop the sound temporarily during playback.

NOTES:
1. *When stopping the tape for a prolonged period of time, use the STOP lever.*
2. *When using a pre-recorded tape to re-record a program source, bear in mind that the pre-recorded sound will sometimes not be erased at the place on the tape where you set the deck to the PAUSE mode.*

AUTO-STOP MECHANISM

The tape is automatically stopped and the operating levers released when the tape becomes completely wound onto one reel during each operating mode (record, playback, fast forward, rewind), even if the STOP lever is not depressed. It takes only a few seconds for this auto-stop operation.

CHROME TAPE DETECTOR

The CT-F1000 comes with a chrome tape detector mechanism. If the cassette tape is provided with extra holes, the deck's bias and equalization circuitry is actuated automatically and set to cater to the chrome tape, and there is no need to select the BIAS and EQ switch settings.

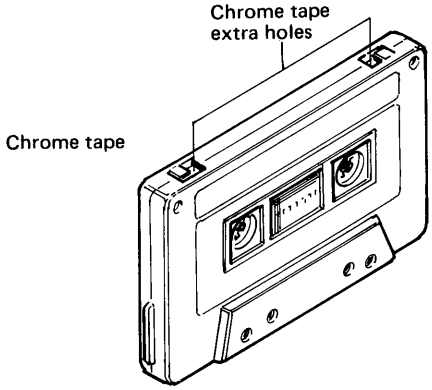


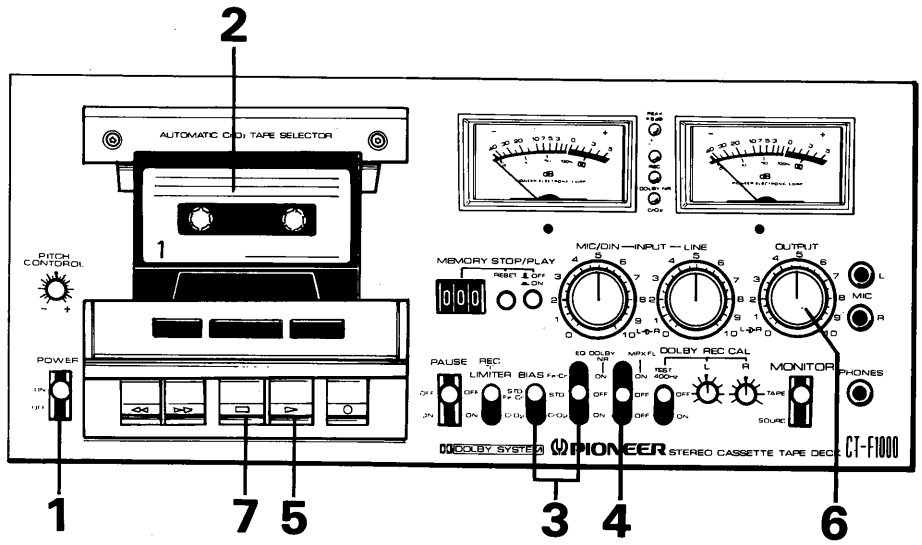
Fig. 6

PLAYBACK

Set the switches and controls as follows before you switch the power on.

- Set the PAUSE switch to OFF.
- Set the tape counter to '000.'
- Set the MEMORY STOP/PLAY button to OFF.
- Set the PITCH control knob to the central position.
- Set the TEST 400Hz switch to OFF.
- Set the MONITOR switch to TAPE.
- Turn the INPUT (MIC/DIN, LINE) recording level control knobs to their leftmost positions.
- Check that the head section is not dirty. Clean if dirty.

Follow the procedure below for playback in numerical order. The step numbers are illustrated in the figure.



1. **Set the POWER switch to ON.**
2. **Insert the cassette tape.**
   Check that the tape is on the left reel and then insert.
3. **Select the BIAS and EQ switch setting.**
   Select according to the type of tape you are using for playback (Refer to section on 'Selecting Bias and Equalizer Switches').
4. **Select the DOLBY NR/MPX FIL switch position.**
   Set this to ON when playing back a Dolby recorded tape.
5. **Play tape.**
   Depress the PLAY lever to start tape play.
6. **Adjust playback level.**
   Adjust the volume using the OUTPUT level controls.
7. **End of playback.**
   The CT-F1000 is automatically set to the stop mode when the tape is fully wound onto the right-hand reel. If you want to stop the tape during playback, depress the STOP lever. If you want to stop the tape temporarily, set the PAUSE switch to ON.

PITCH CONTROL KNOB

Use this control to vary the tape's playback speed (4.8cm/s) — you can make it up to 6% faster or slower. Turning this control to the left from the central position slows down the tape speed, and it lowers the musical steps. Turning it to the leftmost position lowers the musical steps by a semitone. Conversely, turning it to the right increases the tape speed and raises the musical steps. Turning it to the rightmost position raises the musical steps by a semitone.

If you adjust the playback sound with the PITCH control so that it is in line with the musical steps of a tuned piano, you will be able to compensate for slight discrepancies in the musical steps and harmonize the sound of the music quite easily. Normally, this control is kept in the central position (click stop) during playback.

OUTPUT LEVEL CONTROLS

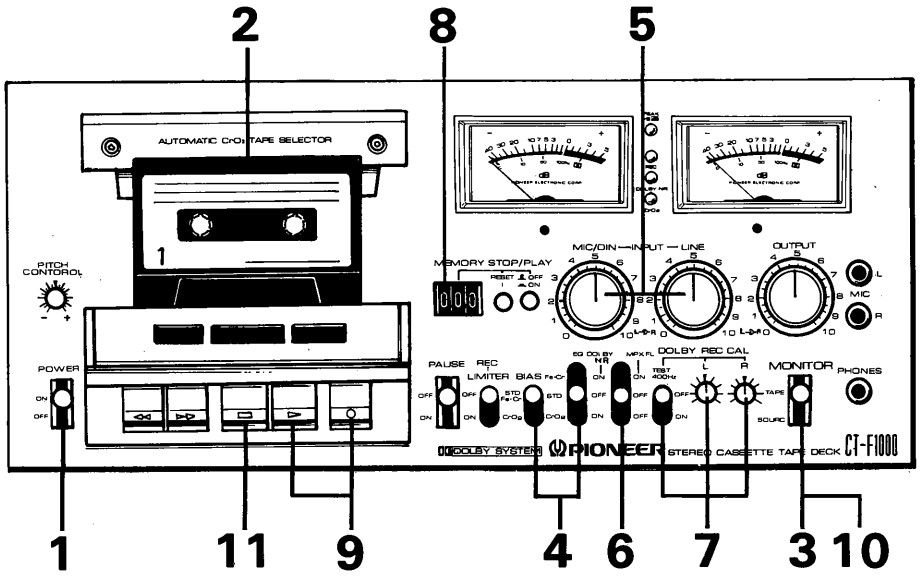
Usually, the output is adjusted with the OUTPUT level controls so that the level meter pointers do not deflect beyond the 0dB position. Use these controls to make the necessary adjustment when the sound of the program source connected to the receiver (or stereo amplifier) differs greatly from that of the tape being play back on the CT-F1000. Use the tape MONITOR switch on the receiver to check that the volumes are adjusted to the same level.

RECORDING

Set the switches and controls as follows before you switch the power on.

- Set the PAUSE switch to OFF.
- Set the MEMORY STOP/PLAY button to OFF.
- Set the REC LIMITER switch to OFF.
- Set the TEST 400Hz switch to OFF.
- Set the MONITOR switch to TAPE.
- Set the DOLBY NR/MPX FIL switch to OFF/OFF.
- Turn the INPUT (MIC/DIN, LINE) recording level control knobs to their leftmost positions.
- Set the program source you want to record (record, FM broadcast, live mike performance).

Follow the procedure below for recording in numerical order. The step numbers are illustrated in the figure.



1. **Set the POWER switch to ON.**
2. **Insert the cassette tape.**
   Check that the tape is on the left reel and then insert.
3. **Set the MONITOR switch to SOURCE.**
4. **Select the BIAS and EQ switch settings.**
   Set the switches to the appropriate positions depending on the type of tape you are recording on and reffering to page 11 and the section on "Selecting Bias and Equalization Switches."
5. **Set the recording level.**
   Use the LINE (or MIC/DIN) recording level controls to adjust so that the meter pointers do not deflect over 0dB. For further details, refer to page 11 and the section on "Setting the Recording Level."
6. **Select the DOLBY NR/MPX FIL switch position.**
   Set this switch to ON with Dolby recordings. For details, refer to page 5 and the section on "DOLBY NR/MPX FIL Switch."
7. **Check the DOLBY REC CAL switch and controls.**
   When Dolby recording, refer to page 12 and the section on "Using the DOLBY REC CAL Switch and Controls."
8. **Set the tape counter to '000'.**
9. **Begin recording.**
   Depress the PLAY and REC levers together. The recording display lamp (REC) lights up and the tape runs from left to right.
10. **Monitoring the recording.**
    If you set the MONITOR switch to TAPE, you can listen and compare the sound quality with that when the same switch is set to SOURCE. If there is anything wrong with the sound when the switch is at TAPE, it may be due to a deformed tape, dirt in the head section, or the recording level or BIAS and EQ switches may be set incorrectly. Locate the fault and start recording again.
11. **End recording.**
    When the tape has been fully wound onto the right-hand reel, the CT-F1000 will automatically stop. Depress the STOP lever if you want to stop the tape during recording. If you want to stop the tape temporarily, set the PAUSE switch to ON.

SETTING THE RECORDING LEVEL

Set the recording level controls so that the level meter pointers deflect across a −3~0dB range and so that the peak indicator does not keeping lighting up when there are relatively high signal peaks in the program source that you are recording. The playback sound will be distorted if the level meter pointers deflect to the upper end of the scale during recording. Conversely, if the angle of deflection is too low, the Signal-to-Noise ratio will deteriorate and there will be a high level of audible noise during playback. The signal level varies from program source to program source, and so keep your eye on the pointers during recording.

The peak indicator sometimes lights up when the pointers' deflection is below 0dB. However, if this indicator lights up only once in a while, the sound will not be distorted even if you continue recording. Re-adjust the recording level if it lights up for long periods of time.

Peak indicator (PEAK +5dB)

Signals from the program source (a broadcast or somebody's voice from a microphone) contain pulse components that give sudden surges in the input level which cannot be detected on the level meters.

The peak indicator lights up to warn of peak levels which occur when the suddenly generated signals exceed the reference recording level by +5dB (about 1.8-fold).

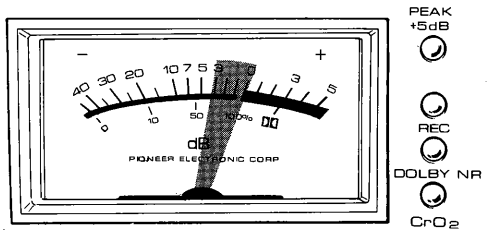


Fig. 7

USING THE MPX FIL SWITCH

The Dolby response is affected if FM stereo pilot signal (19kHz) leakage is incurred from the FM tuner. When recording an FM broadcast in Dolby, set this MPX FIL switch to ON. Set the switch to OFF for other type of recording since this eliminates the effect of the filter's characteristics, provides a wider frequency bandwidth and makes for a more faithful recording.

SELECTING THE BIAS AND EQUALIZER SWITCHES

In order for the tapes to give full rein to their characteristics and for you to keep distortion to the minimum when recording, you should select a bias and equalizer value in keeping with the characteristics of the tape you are using. Select the appropriate switch settings. Standard combinations are listed in the table below.

There is no need to select with tapes having chrome tape detection holes.

Major Tape Brands & Switch Settings Table 3

TAPE		SWITCH POSITION
BASF	CHROMDIOXID C-60 CHROMDIOXID C-90	BIAS—CrO2 EQ — CrO2
PHILIPS	CHROMIUM DIOXIDE C-60 CHROMIUM DIOXIDE C-90	
MAXELL	CHROME DIOXIDE C-60 (CR) CHROME DIOXIDE C-90 (CR)	
TDK	KR C-60, KR C-90 SA-C-60	
FUJI	FC C-60, FC C-90	
SONY	C-60CR, C-90CR	
SCOTCH	CHROME C-60, C-90	
BASF	C-60LH SUPER, C-90LH SUPER	BIAS—STD Fe-Cr EQ — STD
AGFA	C-60, C-90 SUPER C-60 + 6 SUPER C-90 + 6	
SCOTCH	C-60, C-90 (MASTER)	
MAXELL	LN C-60, C-90 UD C-60, C-90 UDXL C-60	
TDK	D C-60, D C-90 SD C-60, SD C-90 ED C-60, ED C-90	
FUJI	FM C-60, FL C-60, FX C-60 FM C-90, FL C-90, FX C-90 FX DUO C-46, C-60, C-90 FX Jr. C-46, C-60, C-90	
SONY	C-60, C-90 C-60HF, C-90HF	
SONY	DUAD C-60, C-90	BIAS—Fe-Cr STD EQ — Fe-Cr
SCOTCH	CLASSIC C-60 CLASSIC C-90	
BASF	FERROICHROM C-60, C-90	

In addition, different switch settings according to the type of tape may improve the sound.

NOTES:

- *When using commercially available pre-recorded music chrome tapes, set the EQ switch to CrO_2 when playing back 70μs high frequency response tapes, and to STD when playing back standard music chrome tapes.*
- *Set the EQ switch to STD when using a chrome tape and other tapes recorded with a conventional standard of 120μs.*

LIMITER RECORDING

Due to the characteristics of the tapes excessive input signals, cause the recording to sound distorted. The over-level limiter automatically reduces a large input signal to the appropriate level on which it does not cause distortion. If the REC LIMITER switch is set to ON, then you can be assured of distortion-free recorded sound even if there are excessive input signals. Set to ON after setting the recording level. The switch is very effective when recording the following:

- Live or on-location recordings where there are great differences between the high and low sound levels.
- Memo recording at meetings and social gatherings.
- Recordings where there are sudden high sound levels.

USING THE MONITOR SWITCH

The CT-F1000 adopts an independently aligned erase/recording/playback 3-head system. If you set the MONITOR switch to TAPE during a tape recording, you can listen to the program which you have just recorded. If you set this switch to SOURCE, you can listen in to the program which you are about to record. This means that by selecting the switch, you can monitor the recording through the headphones. Set the TAPE MONITOR switch on the receiver to ON when monitoring a recording from the receiver.

FOLLOW-ON RECORDING

You can record a new program source onto a pre-recorded tape which is playing in the deck if you depress the PLAY and REC levers together. This procedure is particularly effective for tape editing.

NOTE:
Check that the tape's erasure prevention tabs have not been broken off. You cannot record a new program source if they have. (Refer to page 7 and the section on 'Erasure Prevention Tabs).

ERASING RECORDED SOUND

- When you want to completely erase a program source which you have recorded, set the recording level (LINE, MIC/DIN) controls to their leftmost positions and then allow the tape to run with the tape deck set to the recording mode.
- If you re-record a new program source onto a pre-recorded tape. the previous recording will be erased automatically, and the new program source will be recorded.

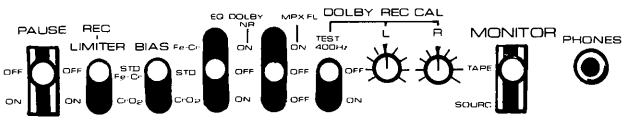


Fig. 8

USING THE DOLBY REC CAL SWITCH & CONTROLS

The CT-F1000's Dolby system is adjusted to the prescribed level for reference tapes. However, the recording and playback levels of tapes sold on the market do differ from tape to tape, in which case the Dolby system does not work effectively. To compensate for the fluctuations in the levels, adjust as outlined below.

1. Inset the tape into the tape deck, following the steps for "Recording."
2. Set the MONITOR switch to SOURCE.
3. Select the suitable BIAS and EQ switch settings in accordance with the type of tape you are using.
4. Set the TEST 400Hz switch to ON.
5. Set the DOLBY NR/MPX FIL switch to ON.
6. Adjust the LINE recording level controls so that the left and right channel level meter pointers indicate 0dB. Turn the MIC/DIN recording level controls to their left-most positions.
7. Depress the PLAY and REC levers, and set the tape deck to the recording mode. The tape will start to run.
8. Set the MONITOR switch to TAPE.
9. Adjust the DOLBY REC CAL (both left and right) controls so that the pointers of both level meters indicate 0dB.
10. Set the TEST 400Hz switch to OFF. This completes the adjustments.
11. Then record, following the steps outlined in "Recording."

TAPE SLACK TAKE-UP MECHANISM

The CT-F1000 employs two capstans and so any slack in the tape will impair the effectiveness of its performance. To safeguard against this kind of malfunction, the deck is provided with a tape slack take-up mechanism which eliminates any slack. What happens is that when the cassette half is inserted, it sets the deck to the rewind mode for a mere second and takes up the slack. If, however, there is a great deal of slack, use a pencil or similar object to take it up before you load the cassette tape.

MICROPHONE RECORDING

STEREO RECORDING

As shown in Fig. 9 use two identical stereo microphones, and connect the one for the left channel to the L MIC jack and the one for the right channel to the R MIC jack. For the actual recording, refer to page 10 and the section on 'Recording.'

Points to bear in mind

- Use dynamic or electret microphones.
- Make sure that the connecting cord for a high-impedance microphone (over 20 kilohms) is less than 5 meters long.
- When you are not recording with the microphones, unplug them from the jacks. If you leave them as they are, you will not be able to record from the DIN (REC/PLAY) connector.
- When you want to check the quality of the recording or what is being recorded, it is a good idea to use the headphones.
- Monitoring the recording with the speakers very often gives rise to howl so use the microphones as far away from the speakers as possible.

MIXING RECORDING

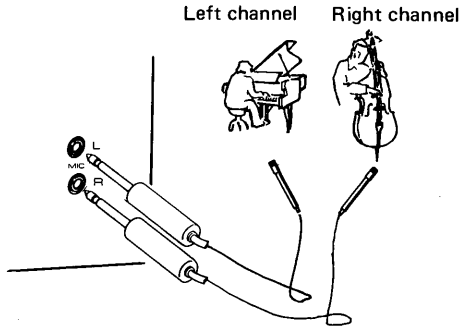
Mixing recording can be performed between the signals from the LINE INPUT terminals and the signals from the MIC jacks or DIN (REC/PLAY) connector.

1. As shown in Fig. 10 connect the microphones to the MIC jacks, and connect the program source, such as the turntable, through the receiver to the CT-F1000's LINE INPUT terminals. When using the DIN connector, unplug the microphones from the MIC jacks.
2. Adjust the mixing levels by setting the MONITOR switch to SOURCE, and setting the recording level control knobs, all the while monitoring the levels through the headphones (or speakers). Use the MIC/DIN recording level controls to adjust the signals from the DIN connector and the LINE recording level controls to adjust the line input signals.
3. For recording, follow the procedure outlined on page 10 and the section on 'Recording.'

NOTES:

1. *Set the recording level controls not used for mixing at their lowest level (turn right round to the left).*
2. *You will obtain much better results with mixing if you turn the LINE recording level controls down slightly rather than if you use the microphones or line input independently.*

Example of Recording with Microphones



Separate microphones from speakers when in use.

Fig. 9

Example of Connections for Mixing Recording

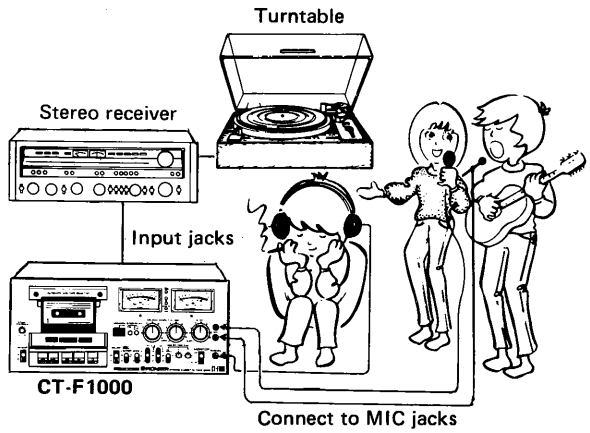


Fig. 10

Recording programs in Mono

- When recording with a monaural microphone, set the mike recording level control of the channel which is not being used (left or right) to the lowest setting.
- When recording a program source in mono with the LINE INPUT terminals, it is a good idea to connect the monaural signal to both the CT-F1000's channels (left and right). Special connecting cords are required for this.

OPERATIONS WITH THE TIMER

UNATTENDED RECORDING

You can use the timer switch, which is sold separately, to record automatically an FM broadcast or other program source at a specified time. This switch is convenient for recording programs when you are out or asleep.

1. As shown in Fig. 11 connect the CT-F1000's power cord to the timer. Also connect the receiver's power cord (or tuner, amplifier) so that the receiver's ON/OFF functions are controlled by the timer.
2. Set the power switches on the CT-F1000 and the receiver to ON, and then select the broadcasting station whose program you want to record.
3. Follow the steps in the section on 'Recording' on page 10. Depress the PLAY and REC levers which set the tape deck to the recording mode, and then set the recording level.
4. Set the timer so that the power will go on at the prescribed time. The power to the other audio components goes off.
5. At the prescribed time, the power will automatically go on and the tape deck will start to record about 2 seconds later. When the tape is completely wound onto the reel, the auto-stop mechanism is activated and the CT-F1000 is switched off. Next, the timer operates and switches the power off.

NOTES:

- *Turn the amplifier's volume control right down so that the sound is not emitted through the speakers.*
- *For more details on the connections, refer to the timer switch's instruction booklet.*

WAKE-UP PLAYBACK

You can have the tape deck play back automatically at a desired time a pre-recorded tape. You can set the timer so that the tape's music wakes you up instead of an alarm clock. As shown in Fig. 11 connect the CT-F1000 and set the timer so that the power is switched on at the desired time. Follow the steps (1) to (6) in "Playback" on page 9 and the tape deck will play back the tape at the desired time.

SLEEPING FUNCTION

If you leave the timer set so that the power will go off in 30 to 60 minutes' time, you can listen to music while you fall off to sleep, without having to worry about turning the tape deck off yourself.

Unattended Recording & Automatic Playback Connections

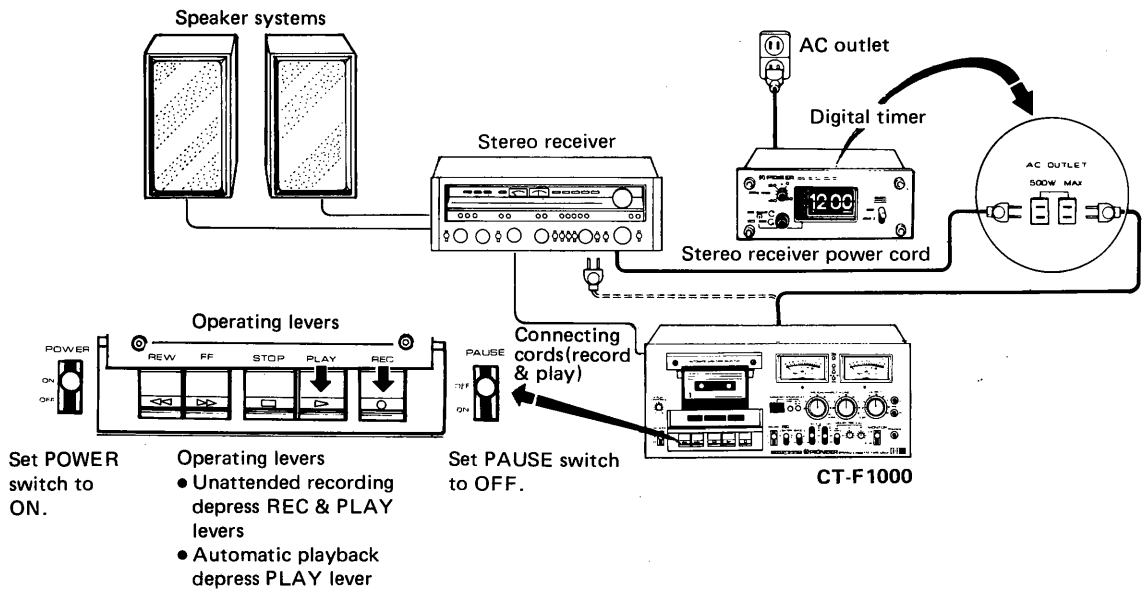


Fig. 11

USING THE MEMORY STOP/PLAY SWITCH

The CT-F1000 is provided with memory stop and play functions. The memory stop function rewinds the tape and stops it at a location for repeated playback when you want to play back a section of a program source on tape which you have recorded or already played back once. The memory play function starts playback automatically at a preselected location of the tape after rewind.

Memory stop

1. Insert the cassette tape, and push the memory switch to ON.
2. Depress the counter reset button at that location on the tape where you want to start the playback while the tape is running. The counter will then be set to "000."
3. Start recording or playback.
4. Stop the tape play (or recording) at the desired location and depress the REW lever. The tape will then rewind.
5. When the counter indicates "999", the auto-stop mechanism will be activated and the tape will stop. The REW lever is released.

Memory play

1. Push the memory switch to set it to ON.
2. Depress the counter reset button at that location on the tape where you want to start the playback, while the tape is running. The counter will then be set to "000."
3. Continue play or recording.
4. Stop the play (or recording) at the desired location and depress the REW lever. The tape will then rewind.
5. Depress the PLAY lever while the tape is being rewound. The rewind will continue.
6. When the counter indicates "999", the tape will stop and the tape deck will automatically be set to the playback mode.

- If the tape runs out during playback, the CT-F1000 will automatically stop and the PLAY lever will be released.

NOTE:
Always set the memory switch to OFF when you do not intend to use the memory stop or memory play functions.

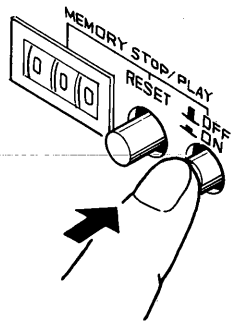


Fig. 12

LINE TERMINALS

Simultaneous recording

The CT-F1000 is provided with two sets of INPUT terminals. As shown in Fig. 13, this means that you can connect another tape deck (cassette, or open-reel) to the LINE INPUT terminals and record the same program source which you are recording on the CT-F1000.

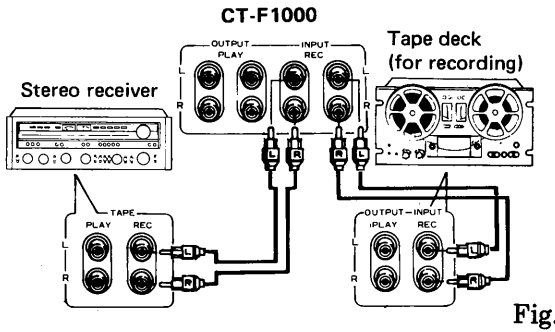


Fig. 13

Duplicating

The CT-F1000 is equipped with two sets of OUTPUT terminals. As shown in Fig. 14, this means that if you connect one set to the recording LINE INPUT terminals on your tape deck (cassette, or open-reel), you can record the program of your choice at the same time as the program source is being played back on the CT-F1000. In other words, you can duplicate tapes.

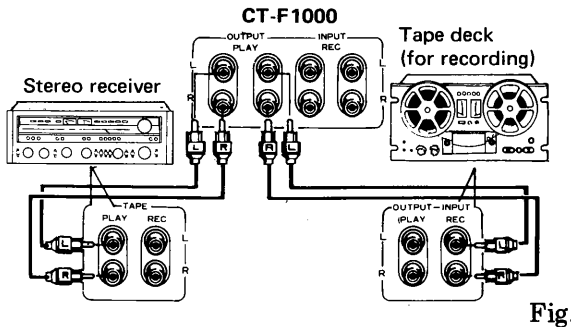


Fig. 14

USING THE DOLBY SYSTEM

The Dolby System is a method of reducing noise generated in the tape playback process. It is widely employed throughout the world.
Since the system is mainly concerned with noise produced by the tape itself, it cannot reduce noise in the program source which is being recorded on tape. This means that to derive the maximum benefit from the Dolby system you should avoid recording signals from records which have been played a lot and also from FM broadcasting stations containing a lot of noise. Instead, you should always try to choose signals with as little noise as possible.

PRINCIPLE

Magnetic tapes used for recording and playback on a tape recorder have a certain amount of inherent noise. The most audible is that in the midrange and treble, and this is called 'hiss.' This can be traced to the size of the magnetic particles in the tape. The hiss is reduced if these particles are small or if the tape is run quickly which in effect reduces the size of the particles. However, the low speed of the cassette places it at a disadvantage in this respect.
The CT-F1000 features a B-type Dolby system which is designed to reduce this hiss. An A-type system is also available on the market and this reduces all kinds of noise (but it is employed in special professional equipment).
Although the noise reduction frequency band differs, both types of Dolby Systems are capable of providing an improvement of up to 10dB under optimum conditions.
The B-type noise reduction system works as follows. When the recording input signals fall below the reference level, the midrange and treble component levels in the signals are successively enhanced and then recorded. A tape recorded in this way is given exactly the reverse treatment during playback. The midrange and treble components below the reference level are successively attenuated and so when the tape is played back, the signals are returned to their original form. At the same time, the tape hiss which is the midrange and treble noise generated in the playback process is attenuated in proportion to the size of the signals — the smaller the signals, the greater the attenuation. This has the effect of reducing the noise.

SELECTING TAPES

Although there are some differences among standard tapes, LH tapes, chrome tapes and ferrichrome tapes, you can use just about any brand with the CT-F1000. It is better to avoid using C-120 tapes which do not have any particular performance specifications and also LH tapes with a high sensitivity level.

NOTE:
In some cases and especially with high sensitivity tapes, Dolby recording and playback can produce deviations in the frequency response and this results in downgrading the sound quality rather than improving it.

RECORDING LEVEL

Adjusting the recording level involves basically the same operations as with non-Dolby recording. However, with wide dynamic range source, such as live recordings with microphones whereby high-volume sounds are being recorded, it is a good idea to set the recording level a little lower than normal. The Dolby System works to suppress noise with low-volume sound and it reduces the level slightly with high-volume sound. This means that you do not have to worry about distortion when recording.

PLAYBACK

- When you play back pre-recorded Dolby music tapes sold on the market on your CT-F1000, you will be surprised at the high quality of reproduction and the very low noise level.
- If the Dolby noise reduction system is not applied during both recording and playback, the signals will lose their original characteristics. Playing back normally recorded tapes with the Dolby system on (noise decreases but treble unbalanced) and playing back Dolby recorded tapes with the Dolby system off (treble is accentuated slightly) are not illustrations of the correct application of the Dolby System.

MAINTENANCE

Follow the maintenance instructions below to keep your tape deck working in tip-top condition.

CLEANING THE HEAD SECTION

The head section is composed of the heads, capstan, pinch roller (see Fig. 15), and with extended use these parts accumulate dust, dirt and grease easily. If this assembly gets dirty, the contact between the tape and the surfaces of the heads is impaired, and this downgrades the sound quality and the stereo balance, and also leads to unstable operation. To prevent this, clean the head section and the surrounding parts regularly with the accessory cleaning swab or with a soft cloth dipped in the accessory cleaning fluid.

- You will find that it is easier to clean the pinch roller if you depress the cassette detection pin and the PLAY lever, since this operation will cause the pinch roller to rotate.

DEMAGNETIZING THE HEAD

The recording head becomes magnetized when you use the tape deck for prolonged periods of time. This results in noise being generated and the treble dropping off during recording and playback. The recording head should therefore be regularly demagnetized with the head eraser, which is sold separately. For further details, refer to the head eraser's instructions booklet.

NOTE:
Do not hold screwdrivers, metal objects or magnets close to the tape heads.

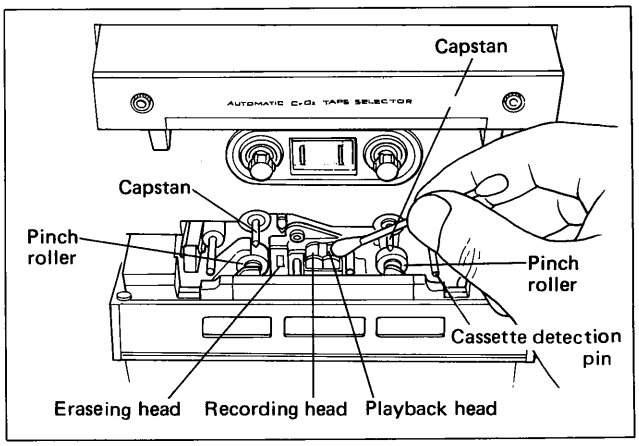


Fig. 15

CLEANING THE FRONT PANEL, DUST COVER

Wipe the front panel and the dust cover when dusty or greasy with a soft cloth containing a small amount of ordinary washing-up liquid. Then, wipe dry with a dry cloth. Never use volatile spirits like thinners, benzine or alcohol because they will damage the panel's finish.

Moisture forms in the operating sections of this model and the model's performance will be impaired if the model is brought from cool surroundings into a warm room or if the temperature of the room rises suddenly.
To prevent any performance impairment, let the model stand in its new surroudings for about an hour before switching it on, or ensure that the room temperature rises gradually.

TROUBLESHOOTING

Although some failures and breakdowns can be traced to legitimate mechanical faults, some are in fact the results of improper maintenance, tape defects or lack of experience in operating the tape deck.
If you think that there is a failure, refer first to the following checklist.

Symptom	Cause	Remedy
Tape does not run.	1. AC cord is not plugged in. 2. Tape has run out. 3. PAUSE switch is set to ON. 4. Cassette is inserted improperly.	1. Plug cord in correctly. 2. Rewind tape. 3. Set PAUSE switch to OFF. 4. Remove tape and insert properly.
High frequencies are weak.	1. Heads are dirty. 2. BIAS, EQ switches are not set in accordance with tape during recording or playback. 3. A non-Dolby recorded tape is being played back with DOLBY NR/MPX FIL switch set ON.	1. Clean heads. 2. Set BIAS, EQ switches correctly in accordance with tape. 3. Set DOLBY NR/MPX FIL switch to OFF.
No playback sound.	1. OUTPUT controls are set to leftmost positions. 2. MONITOR switch is set to SOURCE.	1. Turn controls to suitable position. 2. Set MONITOR switch to TAPE.
Playback sound is distorted.	1. Playback level is too high. 2. Distortion is recorded on tape.	1. Reduce playback level. 2. Replace cassette tape.
Output level cannot be adjusted.	TEST 400Hz switch set to ON.	Set TEST 400Hz switch to OFF.
Musical steps do not harmonize.	PITCH CONTROL is not set properly.	Set to a position where musical steps harmonize.
Sound is unsteady.	1. Dirty capstan. 2. Irregular cassette tape winding.	1. Clean capstan. 2. Replace tape.
Excessive noise.	1. Tape is old. 2. Dolby recorded tape is being played back with DOLBY NR/MPX FIL switch set to OFF.	1. Replace tape. 2. Set DOLBY NR/MPX FIL switch to ON.
Cannot record.	1. Cassette's erasure prevention tabs have been broken off. 2. TEST 400Hz switch is set to ON.	1. Replace tape or cover tab openings with adhesive tape. 2. Set TEST 400Hz switch to OFF.
Recorded sound is distorted.	1. Input level is too high. 2. Dirty heads.	1. Reduce input level. 2. Clean heads.
Auto-stop mechanism actuated before tape wound up.	MEMORY switch is set to ON.	Set MEMORY switch to OFF.
Memory play does not function.	MEMORY switch is set to OFF.	Set MEMORY switch to ON.
Playback does not begin during rewind even if PLAY lever is depressed.	MEMORY switch is set to ON.	1. Set MEMORY switch to OFF. 2. Depress PLAY lever after depressing STOP lever.

SPECIFICATIONS

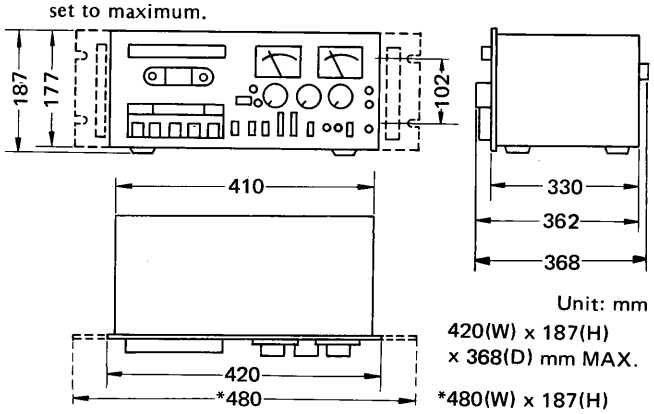
Systems . . . . . Compact cassette, 2-channel stereo
Motor . . . . . Electronically-controlled DC motor (built-in generator) x 1; (4.8cm/s speed drive) DC torque motor x 1; (Fast forward and rewind drive)
Heads . . . . . "Uni-crystal ferrite" recording head x 1 "Uni-crystal ferrite" playback head x 1 (Combination type)
Ferrite erasing head x 1
Operation . . . . . Solenoid drive, direct switchable and timer play presettable
Fast Winding Time . . . . . Approximately 65 seconds (C-60 tape)
Wow and Flutter . . . . . No more than 0.05% (WRMS)
No more than ±0.15% (DIN)
Frequency Response . . . . . Standard, LH tapes: 20 to 17,000Hz (30 to 15,000Hz ±3dB), (35 to 14,000Hz DIN)
Ferri-chromium tape: 20 to 19,000Hz (30 to 17,000Hz ±3dB)
Chromium dioxide tape: 20 to 19,000Hz (30 to 17,000Hz ±3dB), (30 to 15,000Hz DIN)
Signal-to-Noise Ratio . . . . . Dolby OFF: More than 54dB
Dolby ON: More than 64dB (over 5kHz, standard, LH tapes)
(When chromium dioxide tape is used, signal-to-noise ratio is further improved by 4.5dB over 5kHz)
More than 60dB (DIN)
Harmonic Distortion . . . . . No more than 1.3% (0dB)
Inputs (Sensitivity/Maximum allowable input/Impedance)
MIC (L, R); 0.22mmV/100mV/30 kilohms, 6mm diam. jack (Reference MIC impedance; 250 ohms to 30 kilohms)
LINE x 4 (2-channel stereo, Parallel connection system); 60mV/25V/100 kilohms)
REC/PLAY x 1; Input & output, 10mV/5V/2.2 kilohms 5p jack (DIN standard)
Outputs (Reference level/Maximum level/Load impedance)
LINE x 4; 450mV/680mV/50 kilohms (2-channel stereo, Parallel connection system)
REC/PLAY x 1; 450mV/680mV/50 kilohms 5p jack (DIN standard)
HEADPHONES x 1; 62mV/93mV/8 ohms, 6mm diam. jack
Semiconductors
Amplifier Section . . . . . Transistors x 98 (including FETs x 4), Diodes x 96 (including Zener Diodes x 7, LEDs x 4), ICs x 4
Motor control Section . . . Transistors x 3, Diodes x 2, IC x 1
Subfunctions
- Dolby system (ON-OFF)
- Dolby calibration (build-in 400Hz test oscillator)
- MPX Filter (ON-OFF)
- Tape Selector (STD/FeCr/CrO_2)
  Automatic tape selector for CrO_2 tape, and Manual tape selector of independently BIAS/EQ
- Cassette compartment illumination
- Mixing control used for MIC and LINE input
- Tape counter with rewind Memory switch (ON-OFF) for starting point [REW–STOP/PLAY (REC)]
- Recording limiter (ON-OFF)
- Wide scale level meter (–40 to +5dB)
- Recording Peak level indicator (Lightable level; +5dB)
- Pitch control (more than ±6% of rated tape speed)
- Level Memory Marker for inputs and output
- MIC, LINE input and output level controls knob with 41 click step

Power Requirements . . . . . AC 120V, 220V, 240V (switchable) 50/60Hz (D, D/G model) or AC 220V, 240V (switchable) 50/60Hz (HG model)
Power Consumption . . . . . 38 watts (D, D/G), 46 watts (HG)
Dimensions . . . . . 420(W) x 187(H) x 368(D)mm Max.
16-9/16 x 7-3/8 x 14-1/2 in
Weight . . . . . D, D/G model, 12.3kg (27 lb 2oz)
15.5kg (34 lb 3oz)
HG model, 11.9kg (26 lb 4oz)
14.1kg (31 lb 1oz)
Furnished parts . . . . . Stereo connecting cord with pin plugs x 2
Head cleaning kit x 1
Fuse (D, D/G model only) x 1 (120V; 1.2A or 220V, 240V 800mA)
Operating instructions x 1

NOTE:
Specifications and the design subject to possible modification without notice due to improvements.

NOTES:

1. Reference Tapes: Standard & LH: DIN 45513/BLATT6 or equiv.
   : CrO_2: DIN 45513/BLATT7 (CrO_2) or equiv.
2. Reference Recording Level: Meter 0dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 333Hz
4. Wow & Flutter: • JIS [3kHz, with acoustic compensation (weighted), rms value] • DIN [3150Hz, with acoustic compensation (weighted) PEAK value]; DIN 45507
5. Frequency Response: • Measured at –20dB level, DOLBY OFF, level deviation is ±6dB without indication • DIN is DIN 45500
6. Signal-to-Noise Ratio: • Measured at +4dB level (250nwb/m magnetic level = DIN 45513 specified reference level), IEC A curve with acoustic compensation (weighted) • DIN is DIN 45500
7. Sensitivity: Input level (mV) required for reference recording level with input (REC) controls set to maximum.
8. Maximum Allowable Input: While decreasing settings of input (REC) level controls and increasing level at input jacks, this is the maximum input level (mV) at the point where recording amplifier output waveform becomes clipped.
9. Reference Output Level: Playback output level when meter indicates 0dB.
10. Maximum Output Level: Playback output level with respect to reference recording level when output (PLAY) level controls are set to maximum.



Unit: mm
420(W) x 187(H) x 368(D) mm MAX.
*480(W) x 187(H) x 368(D) mm MAX.
*with rackmount adaptor JA-R102

LINE VOLTAGE AND REAR PANELS

CT-F1000 are designed to accept different line voltages, according to the country in which they are to be used, although the operation of the various models is the same in every respect. Fig. A shows the model designed to operate at any of two pre-selected voltages (220V, 240V).
Fig. B shows the model designed to operate at any of three selected voltages (120V, 220V, 240V).
Line voltage and fuse can be changed and set as follows:

220V and 240V MODEL (Fig. C)

1. Disconnect the A.C. mains cord.
2. Use a Phillips screwdriver to take out the VOLTAGE SELECTOR plug locking screw.
3. Pull out the VOLTAGE SELECTOR plug from the socket.
4. Rotate the plug until the cutway aligns with the appropriate line voltage marker on the back of the unit, and then replace it in the socket.
5. Replace the fuse and FUSE CAP.

120V, 220V and 240V MODEL (Fig. C)

1. Disconnect the A.C. mains cord.
2. Use a Phillips screwdriver to take out the FUSE CAP and fuse.
3. Pull out the VOLTAGE SELECTOR plug from the socket.
4. Put the selector plug back so that the appropriate line voltage marking can be seen through the cut in the edge of the plug.
5. Change the fuse in accordance with the table.
6. Replace the fuse and FUSE CAP.

220V, 240V model Rear Panel

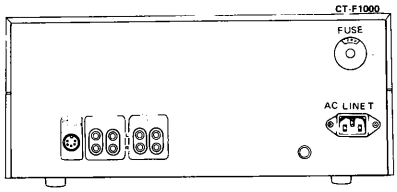


Fig. A

120V, 220V, 240V model Rear Panel

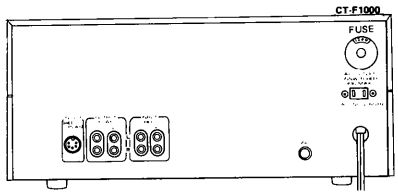


Fig. B

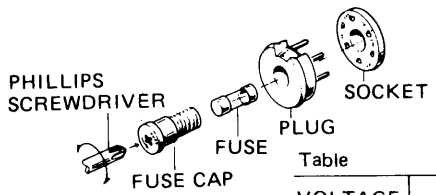


Fig. C

Table

VOLTAGE	FUSE
120V	1.2A
220V 240V	800mA

FOR USE IN UNITED KINGDOM or AUSTRALIA

CAUTION 240V
Mains supply voltage is factory adjusted at 240 volts.

WARNING
This apparatus must be earthed.

IMPORTANT
The wires in this mains lead are coloured in accordance with the following code:

Green-and-Yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol. or coloured green or green-and-yellow. The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured blue or black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured brown or red.
Do not unscrew the bottom plate and cabinet, no user serviceable parts inside.
Always disconnect all the equipment from the mains supply when connecting the signal leads. The Power cord should be connected last, make sure that the Power switch is OFF.
First insert the female appliance connector of the mains cord into the AC inlet, then plug the cord to the wall socket.
Be sure the appliance connector is fully inserted into the AC inlet.
Unplug the set from the wall socket when it is not be used for an extended period of time.

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